Syphilis Outbreak Among American Indians --- Arizona, 2007--2009

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On January 25, 2007, an Indian Health Service (IHS) unit notified the Arizona Department of Health Services (ADHS) of five symptomatic syphilis cases (i.e., primary or secondary syphilis) that had occurred in members of a Southwest Indian Nation during the previous 6 months. By mid-April, three more cases had been identified. On April 18, 2007, the tribe declared an outbreak of syphilis and subsequently requested public health assistance from county, state, and federal agencies. On July 10, an enhanced, coordinated multiagency response to the outbreak began, involving tribal and Pima County health departments, IHS, ADHS, and CDC. This report summarizes the enhanced outbreak response, which identified a total of 106 cases of syphilis with onset from January 2007 to June 2009, including six congenital cases (two of them stillbirths). Initial communication gaps led to delays in response to this outbreak, but communication was improved through the formation of an outbreak response group that included members from county, state, and tribal health departments and IHS (*1*). For similar outbreaks in American Indian tribes, where various public health jurisdictions exist and often have concurrent responsibilities, formation of an outbreak response group can improve control efforts.

For the affected Indian tribe, primary responsibility for traditional public health activities has been held by the tribal health agency and IHS, which have employed community health educators and public health nurses. ADHS has conducted surveillance for all notifiable diseases through provider and laboratory reporting, and the health department in the county in which the tribe is located has performed all syphilis investigations. Before the enhanced outbreak response began on July 10, 2007, the only syphilis screening conducted in the tribe's population was for pregnant women, which was performed at the first prenatal visit. According to the state sexually transmitted disease (STD) surveillance database, no cases of primary or secondary syphilis had been reported in this tribe during the previous 10 years. A neighboring tribe was experiencing an increase in syphilis during the same time frame. After identification of the initial syphilis cases in January 2007, the county health department began conducting partner tracing for the cases and referring partners for testing and treatment to the local IHS facility, or to the county health department STD clinic.

Beginning July 10, 2007, as part of the enhanced outbreak response, CDC began training tribal community health representatives and IHS public health nurses to do STD case investigations and partner follow-up. At the same time, the outbreak response group began a new comprehensive syphilis, human immunodeficiency virus (HIV), chlamydia, and gonorrhea screening program on the reservation to include 1) clinic- and hospital-based screening of all persons aged 12--55 years receiving health care (including pregnant women), 2) screening of all incarcerated adults and juvenile detainees, 3) screening of students at seven high schools and of youths at six social

events, 4) screening of all workers at two work sites, and 5) door-to-door screening in seven of the reservation's 11 districts. Members of the outbreak response group also established clinical standing orders for testing (using rapid plasma reagin) and empiric treatment of partners, conducted educational lectures for medical providers, distributed print and radio messages for the community, and gave education and testing sessions at local high schools, community events, and recreation centers. In September 2007, the state health department sent a letter to all Phoenix-area IHS providers notifying them of the outbreak and outlining recommendations regarding syphilis testing and treatment. In December 2007, the state health department sent a notice describing the outbreak to all 7,600 licensed medical providers in Arizona. This notice included syphilis symptom descriptions and screening recommendations for persons engaging in unprotected sex.

When the enhanced outbreak response began on July 10, a total of 35 cases of syphilis had been identified: 11 primary cases, three secondary, 12 early latent, seven late latent, one of unknown duration, and one congenital (Figure). By the end of the outbreak in June 2009, a total of 106 syphilis cases had been identified (11 primary, 11 secondary, 39 early latent, 24 late latent, 15 of unknown duration, and six congenital). Possible risk factors for syphilis identified among adult patients included having more than one sex partner (58%) or use of alcohol (69%), cocaine (44%), or methamphetamine (9%) in the year before diagnosis (*2*). Five of the patients identified themselves as men who have sex with men. Of the 100 cases among adults and adolescents, 69 were in females, 47 were in persons aged ≤25 years, and 20 were in persons aged 14--19 years. One infected sex partner was from the neighboring tribe that was experiencing a concurrent increase in syphilis.

As part of the enhanced outbreak response, public health investigators interviewed all 100 adult and adolescent syphilis patients to identify partners for testing and treatment referral. Among the 198 sex partners identified through interviews, 46 (23%) were determined to have previously identified and treated syphilis cases (Table 1), 34 (17%) were new syphilis cases (five primary, five secondary, 20 early latent, three of unknown duration, and one late latent); 36 (18%) received presumptive treatment for incubating syphilis. Of the 198 partners identified, only one was from the affected neighboring tribe.

As a result of the new syphilis screening program on the reservation, a total of 5,874 persons were tested, and 51 cases were detected. Another 21 cases were identified when persons voluntarily sought care, and 26 cases were identified via partner notification efforts (Table 2). After the enhanced outbreak response was initiated, infectious primary and secondary cases continued to be identified, the last one occurring in December 2008 (Figure). The monthly incidence declined in early 2009, and the last syphilis case was diagnosed in June 2009.

Before this outbreak began in January 2007, the statewide incidence of primary and secondary syphilis had been decreasing among American Indians in Arizona, from 19 cases (6.7 cases per 100,000 population) in 2004 to 14 cases in 2005 (*4*). In 2006, statewide cases for American Indian/Alaska Native (AI/AN) populations rose to 17 and to 34 (10.1 cases per 100,000) in 2007. Cases attributable to the outbreak represented 44% of all primary and secondary syphilis cases among American Indians in Arizona in

2007 (*4*). The primary and secondary syphilis rate for the affected tribe during 2007 reached 75 cases per 100,000 (*4*), compared with a statewide rate of 4.8 cases per 100,000 (*5*).

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Editorial Note

Nationally, the majority of cases of primary and secondary syphilis have occurred in men who have sex with men aged 35--44 years (*5*). Among AI/ANs, the majority of such cases have occurred among males (*6*). This outbreak represents a different situation, with 69% of cases occurring in females and 47% occurring in persons aged ≤25 years. The reason for differences in epidemiology for this outbreak could not be determined.

The investigation of this syphilis outbreak identified opportunities for school and community-based STD education and screening and for expanded local disease investigation capacity. In addition, a health-care facility--based screening program facilitated the screening of more than half of the estimated adult population of this tribe (*4*). Measures used to identify undiagnosed syphilis cases as part of the enhanced outbreak response included partner notification, medical provider education on symptom recognition and treatment, and community-, hospital-, and school-based education and screening after identification of sentinel symptomatic cases (*1,7,8*). After these interventions, the number of infectious syphilis cases declined, although the decline was gradual during a period of 18 months and the specific contribution of these interventions to the decline cannot be determined. Traditional partner investigation remained a mainstay of the response and identified approximately half of the total cases and half of the infectious cases (primary and secondary stages). Most of the other cases (approximately 3% of the infectious cases) were identified through clinic-based and community-based screening. Although health-care facility--based screening was simpler and required fewer resources, community outreach screening identified several adolescent patients from schools and youth social events.

Inadequate communication among state, county, and tribal health departments and IHS during the initial part of the outbreak contributed to a delayed response to the outbreak. Initial challenges also included lack of an IHS or tribal public health entity to coordinate the outbreak investigation, limited knowledge of STD contact investigations among tribal and IHS providers at the time of initial case identification, and strained public health working relationships between the tribe and the IHS service unit. The formation of an outbreak response group allowed coordination of outbreak control activities. Improved communication and IHS and tribal ability to conduct STD case investigations now have enhanced local capacity to respond to outbreaks (A. Fallon, IHS, personal communication, 2009).

STDs, including syphilis, impose a substantial burden on AI/AN populations and the IHS health-care system. In 2007, among all races and ethnicities, AI/ANs had the second highest rates of chlamydia and gonorrhea nationally (733 cases per 100,000 population and 107 cases per 100,000, respectively), and the third highest rate of primary and secondary syphilis (3.4 cases per 100,000) (*6*). In addition, reported case rates of chlamydia, gonorrhea, and primary and secondary syphilis among AI/ANs were two to five times higher than rates for whites (*6*).

Few American Indian tribes have departments of public health, primarily because of limited resources (*9*). This outbreak of syphilis demonstrated the need for a better mechanism to respond to disease outbreaks in affected tribes. Tribal health departments and IHS should designate personnel to serve as surveillance contacts to assist county and state health departments in controlling outbreaks of STDs and other infectious diseases among American Indians (*10*).

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What is already known on this topic?

Syphilis outbreak response requires coordinated and expeditious surveillance, partner services, screening of at-risk populations, and diagnosis and treatment.

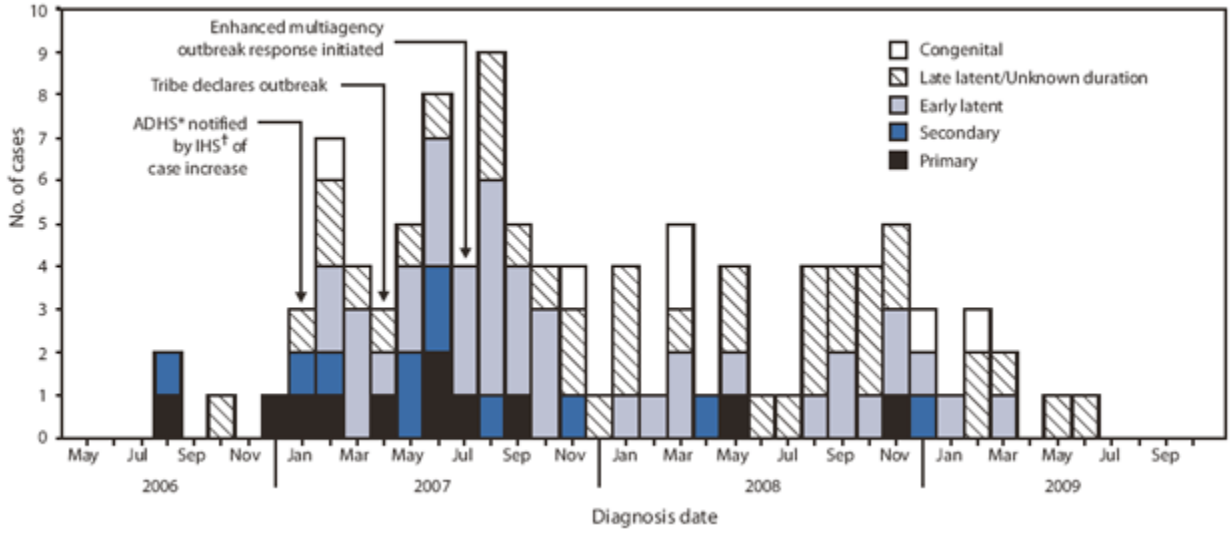
What is added by this report?

A coordinated response among tribal, Indian Health Service, county, state, and federal agencies, which included local training and technical assistance, identified 100 adult and adolescent and six congenital syphilis cases (including two stillbirths).

What are the implications for public health practice?

For certain sexually transmitted disease outbreaks in American Indian tribes, where various public health jurisdictions might have concurrent responsibilities, formation of an outbreak response group that includes tribal and IHS representatives and the state and local health departments, can improve control efforts.

FIGURE. Number of outbreak-associated syphilis cases (N = 106), by month and stage, among American Indian tribal members --- Arizona, May 2006--October 2009



* Arizona Department of Health Services.

† Indian Health Service.

Alternative Text: The figure above shows the number of outbreak-associated cases of syphilis (N = 106), by month and stage, among American Indian tribal members during an Arizona outbreak during May 2006-October 2009.

TABLE 1. Outcome for named partners (N = 198) in American Indian tribal outbreak-associated syphilis cases --- Arizona, August 2, 2006--June 30, 2009

Outcome	No.	(%)*
Presumptive treatment†	36	(18)
Diagnosed with syphilis/received treatment§	34	(17)
Syphilis stage (diagnosed partners)		
Primary	5	
Secondary	5	
Early latent	20	
Unknown duration	3	
Late latent	1	
Partners previously diagnosed and treated for syphilis (before patient interview)¶	47	(24)
Negative test** (not treated for syphilis)	32	(16)
Could not be located	37	(19)
Other dispositions††	6	(3)
Refused examination	3	(2)
Remain under investigation	3	(2)

* Percentages might not total 100% because of rounding.

† Seronegative partners who received treatment for possible incubating syphilis.

§ Partners with diagnosed syphilis after health department interview of the index patient.

¶ Partners with diagnosed syphilis before health department interview of the index patient.

** Partners tested and found to be negative for syphilis.

†† Other dispositions per CDC sexually transmitted diseases/human immunodeficiency virus interview record form.

TABLE 2. Method of detection of adult and adolescent syphilis cases (N = 100) among American Indian tribal members, by stage of disease --- Arizona, August 2, 2006--June 30, 2009

Case-finding method	No. of screening tests performed	No. of cases detected
Screening	5,874	53
IHS hospital/clinic*	4,511	40
Primary		1
Secondary		1
Early latent		17
Unknown duration		3
Late latent		18
Community outreach†	406	3
Primary		0
Secondary		0
Early latent		1
Unknown duration		2
Late latent		
School	650	3
Primary		0

Secondary		0
Early latent		2
Unknown duration		1
Late latent		0
Jail/Prison/Juvenile detention/Drug treatment	307	7
Primary		1
Secondary		0
Early latent		2
Unknown duration		2
Late latent		2
Nonscreening		47
Case sought care for syphilis signs/symptoms		14
Primary		8
Secondary		6
Early latent		0
Unknown duration		0
Late latent		0
Case sought care for suspected exposure		7
Primary		0

Secondary		0
Early latent		2
Unknown duration		4
Late latent		1
Partner/Contact referral§		26
Primary		1
Secondary		4
Early latent		15
Unknown duration		3
Late latent		3

* Indian Health Service; includes seven adult females diagnosed during prenatal testing and two adult females diagnosed at time of delivery.

† Includes youth social events, door-to-door screening, and work site testing.

§ The case was referred either by the infected partner or the health department after the original case interview.